Fossil Energy Research and Development
Office of Fossil Energy

Funding by Site by Program

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
Chicago Operations Office					
Ames National Laboratory					
Coal and Power Systems	500	520	510	-10	-1.9%
Argonne National Laboratory (East)					
Coal and Other Power Systems	3,582	3,550	3,663	+113	+3.2%
Natural Gas Technologies	560	210	0	-210	-100.0%
Total, Argonne National Laboratory (East)	4,142	3,760	3,663	-97	-2.6%
Brookhaven National Laboratory					
Coal and Other Power Systems	200	100	0	-100	-100.0%
Natural Gas Technologies	0	150	0	-150	-100.0%
Total, Brookhaven National Laboratory	200	250	0	-250	-100.0%
Total, Chicago Operations Office	4,842	4,530	4,173	-357	-7.9%
Idaho Operations Office					
Idaho National Engineering and Environmental Lab					
Coal and Other Power Systems	760	690	570	-120	-17.4%
Natural Gas Technologies	250	200	0	-200	-100.0%
Total, Idaho National Engineering and Environmental Lab	1,010	890	570	-320	-36.0%
Total, Idaho Operations Office	1,010	890	570	-320	-36.0%

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
Livermore Site Office					
Lawrence Livermore National Laboratory					
Coal and Other Power Systems	140	0	0	0	0.0%
Natural Gas Technologies	250	250	0	-250	-100.0%
Petroleum – Oil Technology	200	175	0	-175	-100.0%
Total, Lawrence Livermore National Laboratory	590	425	0	-425	-100.0%
Total, Livermore Site Office	590	425	0	-425	-100.0%
Los Alamos Site Office					
Los Alamos National Laboratory					
Coal and Other Power Systems	1,898	1,428	1,100	-328	-23.0%
Natural Gas Technologies	740	250	0	-250	-100.0%
Petroleum – Oil Technology	50	305	0	-305	-100.0%
Total, Los Alamos National Laboratory	2,688	1,983	1,100	-883	-44.51%
Total, Los Alamos Site Office	2,688	1,983	1,100	-883	-44.51%
National Energy Technology Laboratory					
National Energy Technology Laboratory					
Coal and Other Power Systems	413,499	325,920	324,092	-1,828	-.0.6%
Natural Gas Technologies	34,999	40,218	9,900	-30,318	-75.4%
Petroleum – Oil Technology	31,769	31,760	9,900	-21,860	-68.8%
Program Direction and Management Support	79,196	77,757	74,202	-3,555	-4.6%
Plant and Capital Equipment	6,914	6,902	0	-6,902	-100.0%
Fossil Energy Environmental Restoration	7,309	6,781	6,352	-429	-6.3%
Cooperative Research and Development	8,121	8,244	2,970	-5,274	-64.0%

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
Advanced Metallurgical Research	9,876	9,861	8,000	-1,861	-18.9%
Total, National Energy Technology Laboratory.....	591,683	507,443	435,416	-72,027	-14.2%
NNSA Service Center					
Lawrence Berkeley National Laboratory					
Coal and Other Power Systems	580	150	100	-50	-33.3%
Natural Gas Technologies	850	330	0	-300	-100.0%
Petroleum – Oil Technology	200	125	0	-125	-100.0%
Total, Lawrence Berkeley National Laboratory	1,630	605	100	-505	-83.5%
Total, NNSA Service Center	1,630	605	100	-505	-83.5%
Oak Ridge Operations Office					
Oak Ridge National Laboratory					
Coal and Power Systems	6,089	6,951	7,074	+123	+1.8%
Natural Gas Technologies	510	448	0	-448	-100.0%
Total, Oak Ridge National Laboratory	6,599	7,399	7,074	-325	-4.4%
Total, Oak Ridge Operations Office	6,599	7,399	7,074	-325	-4.4%
Richland Operations Office					
Pacific Northwest Laboratory					
Coal and Power Systems	3,817	3,240	5,490	+2,250	+69.4%
Natural Gas Technologies	690	478	0	-478	-100.0%
Total, Pacific Northwest Laboratory	4,507	3,718	5,490	-1,772	-47.7%
Total, Richland Operations Office	4,507	3,718	5,490	-1,772	-47.7%

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
Sandia Site Office					
Sandia National Laboratories					
Coal and Power Systems	900	820	700	-120	-14.8%
Natural Gas Technologies	690	0	0	0	0.0%
Total, Sandia National Laboratories	1,590	820	700	-120	-14.6%
Total, Sandia Site Office	1,590	820	700	-120	-14.6%
Washington Headquarters					
Coal and Power Systems	8,094	8,151	7,693	-458	-0.6%
Natural Gas Technologies	1,746	2,792	100	-2,692	-96.4%
Petroleum – Oil Technology	1,888	1,556	100	1,456	-93.6%
Program Direction and Management Support	27,029	26,771	24,739	-2,032	-7.6%
Fossil Energy Environmental Restoration	1,835	1,809	1,716	-93	-5.1%
Import/Export Authorization	2,716	1,774	1,799	+25	+1.4%
Special Recruitment Programs	0	656	656	0	0.0%
National Academy of Sciences Program Review	494	493	0	-493	-100.0%
Cooperative Research and Development	40	39	30	-9	-23.1%
Total, Washington Headquarters	43,842	44,041	36,833	+792	-2.2%
Total, Fossil Energy Research and Development	658,981	571,854	491,456	-80,398	-14.1%

Site Description

Ames National Laboratory

The Ames National Laboratory is located in Ames, Iowa.

Coal and Other Power Systems
Ames National laboratory conducts advanced research on virtual simulations and high temperature materials.

Argonne National Laboratory (East)

The Argonne National Laboratory (ANL), located in Argonne, Illinois, is a major multi-program laboratory managed and operated for the U.S. Department of Energy (DOE) by the University of Chicago under a performance-based contract.

Coal and Other Power Systems
Argonne research supports concepts for various technologies for Central Systems; supports DOE strategies to capture CO_2 from existing and advanced fossil fuel conversion systems in Sequestration R&D; supports DOE strategies to develop non-destructive testing examination of materials and mineral sequestration kinetics in the Advanced Research; and supports the DOE-SECA core technology program in Distributed Generation Systems.

Natural Gas Technologies
Argonne research for the Fossil Energy Natural Gas Technologies program in FY 2004 supported Drilling, Completion and Stimulation technology development and Environmental Science R&D. No activities are planned in FY 2005 and FY 2006.

Brookhaven National Laboratory

The Brookhaven National Laboratory (BNL) is located on Long Island, New York.

Coal and Other Power Systems
The Brookhaven National Laboratory conducts research on various technologies for central systems.

Natural Gas Technologies
Brookhaven research for the Fossil Energy Natural Gas Technologies program in FY 2005 supports Drilling, Completion and Stimulation technology development and Environmental Science R&D. No activities were performed in FY 2004 or planned in FY 2006.

Idaho National Engineering and Environmental Laboratory

The Idaho National Engineering and Environmental Laboratory (INEEL) is locate outside of Idaho Falls, Idaho.

Coal and Other Power Systems
Research conducted at INEEL supports concepts for various technologies for Central Systems; conducts research on breakthrough concepts to separate and capture CO_2 in Sequestration R&D; and conducts research and development on materials development and bio-processing research in Advanced Research.

Natural Gas Technologies
Research conducted in FY 2004 supported environmental technology development, drilling technology and microbial analysis of gas hydrates, and small pipe development. In FY 2005 and FY 2006 no activity is planned.

Lawrence Berkeley National Laboratory

The Lawrence Berkeley National Lab (LBNL) is located in Berkeley, California.

Coal and Other Power Systems
The Lawrence Berkeley National Lab conducts research which supports concepts for various technologies for Central Systems; and conducts research and development on geologic sequestration approaches and measurement, monitoring, and verification protocols in Sequestration R&D.

Natural Gas Technologies
Research conducted in FY 2004 and FY 2005 supports environmental analysis and modeling, heavy oil upgrading, reservoir characterization, and gas hydrates characterization. No new activity is planned in FY 2006.

Petroleum – Oil Technology
Research supports enhanced oil recovery (EOR) and environmental modeling.

Lawrence Livermore National Laboratory

The Lawrence Livermore National Lab (LLNL) is located in Livermore, California.

Natural Gas Technologies
Research conducted in FY 2004 supported environmental emissions analysis, reservoir geophysics, and hydrates properties, and hyperspectral remote leak detection. No activity is planned in FY 2005 or FY 2006.

Petroleum – Oil Technology
Research supports environmental and reservoir modeling. No new activity is planned in FY 2006.

Los Alamos National Laboratory

The Los Alamos National Laboratory (LANL) is located in Los Alamos, New Mexico.

Coal and Other Power Systems
Research conducted by the Los Alamos National Laboratory supports concepts for various technologies for Central Systems; conducts research and development in the area of Sequestration R&D to lower the costs of

CO_2 capture, provide fundamental scientific information on engineered terrestrial sequestration approaches, and develop advanced instrumentation to measure and validate terrestrially sequestered carbon; and conducts research and development in the area of Advanced Research to model mineral sequestration and develop hydrogen separation membranes.

Natural Gas Technologies
Research conducted in FY 2004 supported multi-purpose energy meter. No activity is planned in FY 2005 or FY 2006.

Petroleum – Oil Technology
Research conducted in FY 2004 supported seismic and drilling research. No activity is planned in FY 2005 or FY 2006.

National Energy Technology Laboratory

The National Energy Technology Laboratory (NETL), located in Morgantown, West Virginia, Pittsburgh, Pennsylvania, and Tulsa, Oklahoma, is a multi-purpose laboratory, owned and operated by the U.S. Department of Energy. NETL conducts and implements science and technology development programs for the Department in energy and energy-related environmental systems. NETL's key functions are to shape, fund, and manage extramural (external) RD&D projects, conduct on-site science and technology research, and support energy policy development and best business practices within the Department.

Coal and Other Power Systems

Scientists and engineers at the National Energy Technology Laboratory (NETL) conduct basic and applied research and development in support of the Office of Coal and Power Systems programs. In-house research in the coal gasification area involves advanced materials testing; gas-stream pollutant removal; sorbents development; particulate removal; and membrane separations. NETL researchers are also working to improve the next generation of gas turbines, fuel cells, and coupled turbine-fuel cell systems. In-house emissions control research focuses on the problems of Hg and $PM_{2.5}$ because these will be regulated in the relatively near future, while the by-product utilization in-house research solves environmental problems related to wastes and by-products formed during combustion processes. Research in carbon sequestration science studies the scientific basis for carbon sequestration options for large stationary sources of CO_2. Finally, research in computational energy science is being conduced to utilize advanced simulation techniques to improve and speed the development of cleaner, more efficient energy devices and plants.

Natural Gas Technologies
Within the Natural Gas Program, NETL has capability in hydrogen testing, computational chemistry, laser ignition development, and plastic pipe defect detection and these functions will continue in FY 2004 and FY 2005. No new activity is planned in FY 2006.

Petroleum – Oil Technology
Specific onsite expertise in enhanced oil recovery (EOR), environmental science, computational chemistry, and policy analysis supports the Oil Technology Program. No new activity is planned in FY 2006.

Program Direction and Management Support
This activity provides funding for salaries, benefits and overhead expenses for management of the Fossil Energy (FE) program at the National Energy Technology Laboratory (NETL), with sites in Morgantown, WV, Pittsburgh, PA, and Tulsa, OK.

Plant and Capital Equipment
This activity provides funding for general plant projects at the National Energy Technology Laboratory (NETL), with sites in Morgantown, WV, Pittsburgh, PA, and Tulsa, OK; and the Albany Research Center. In FY 2004 and FY 2005 funding is included for construction, renovation, furnishing, and demolition or removal of buildings at NETL facilities in Morgantown, West Virginia, and Pittsburgh, Pennsylvania. No new activity is planned in FY 2006.

Fossil Energy Environmental Restoration
Activities are to ensure protection of workers, the public, and the environment in performing the mission of the National Energy Technology Laboratory (NETL) at the Morgantown, West Virginia, Pittsburgh, Pennsylvania, and Tulsa, Oklahoma sites, and the Albany Research Center at Albany, Oregon.

Oak Ridge National Laboratory

The Oak Ridge National Laboratory (ORNL) is located in Oak Ridge, Tennessee.

Coal and Other Power Systems
The Oak Ridge National Laboratory conducts research on advanced materials that are applicable to advanced coal based power generation systems such as Vision 21 in Central Systems; conducts research and development in the area of Sequestration R&D to further geologic sequestration concepts, including measurement, monitoring and verification, and to understand the important soil parameters that facilitate terrestrial sequestration; and conducts research and development in the area of Advanced Research to develop materials and perform bio-processing research.

Natural Gas Technologies
Research conducted in FY 2004 supported oil processing environmental mitigation technologies and characterization of gas hydrates. ORNL has capabilities in petroleum product physical measurements, and EMAT sensor development. No activity is planned in FY 2005 or FY 2006.

Pacific Northwest Laboratory

The Pacific Northwest Laboratory (PNNL) is located in Richland, Washington.

Coal and Other Power Systems
The Pacific Northwest Laboratory conducts research and development in the area of Advanced Research to perform materials research and environmental analyses; and conducts research and development in the area of Distributed Generation Systems in support of the DOE-SECA program.

Natural Gas Technologies
Research conducted in FY 2004 supported reservoir geophysics, hydrate characterization, and ultrasonic strain detection. No activity is planned in FY 2005 or FY 2006.

Sandia National Laboratories

The Sandia National Laboratory (SNL) is located in Albuquerque, New Mexico, and Livermore, California.

Coal and Other Power Systems
The Sandia National Laboratories conducts research and development in the area of Sequestration R&D on injection of CO_2 into depleted oil and gas formations, and advanced monitoring methodologies based on advanced seismic concepts; and conducts research and development in the area of Advanced Research to develop hydrogen separation membranes and conduct fundamental combustion research.

Natural Gas Technologies
Research conducted in FY 2004 supported air emissions detection, measurement while drilling technology, reservoir geomechanical analysis, and airborne leak detection. No activity is planned in FY 2005 or FY 2006.

Washington Headquarters

Coal and Other Power Systems
This funding provides program support and technical support for each of the program within the Coal and Other Power Systems Program.

Natural Gas Technologies
The funding provides program support and technical support.

Petroleum – Oil Technology
The funding provides program support and technical support.

Program Direction and Management Support
This activity provides funding for salaries, benefits and overhead expenses for management of the Fossil Energy (FE) program at Headquarters.

Fossil Energy Environmental Restoration
The funding provides program support and technical support.

Import/Export Authorization
The Office of Import/Export Authorization manages the regulatory review of natural gas imports and exports, exports of electricity, and the construction and operation of electric transmission lines which cross U.S. international borders.

National Academy of Sciences Program Review
This program provide for a study, in FY 2004, by the National Research Council (NRC) of prospective future benefits of Fossil Energy R&D.

Cooperative Research and Development
The funding provides program support and technical support.

Other

Coal and Other Power Systems

- The Clean Coal Power Initiative subprogram funds research at major performers at non-DOE locations. Examples of these performers include Wisconsin Electric Power Company, Western Greenbrier Co-Generation, LLC., Great River Energy, University of Kentucky Research Foundation, and Neuco, Inc. at Dynergy Midwest Generation.

- The Central Systems subprogram funds research at major performers at non-DOE locations. An example of these performers include the Albany Research Center focusing on various advanced materials and process-related concepts.

- The Sequestration R&D subprogram funds research at major performers at non-DOE locations. Examples of these performers include the CO_2 Capture Project (CCP), a collaborative effort involving nine major international energy companies, that has the goal of developing advanced technologies to significantly (75%) reduce the costs of capturing CO_2 from fossil fuel energy systems, an advanced fossil fuel conversion process with inherent CO_2 capture (Alstom), development of a combined membrane-fossil fuel combustion system that would produce a pure stream of CO_2 for sequestration (Praxair), and testing a regenerable sobent system capable of capturing CO_2 from advanced coal gasification systems (RTI). The Sequestration R&D subprogram also funds research at major colleges and universitiesBdeveloping an accurate cost and performance model for CO_2 capture systems (CMU); using hardwoods to restore mine lands (University of Kentucky); developing a carbon management geographic information system (MIT)Band at non-governmental organizations such as the Nature Conservancy who is developing a carbon accounting system for large forest ecosystems.

- The Fuels subprogram funds research at major performers at non-DOE locations. Examples of these performers include: Eltron Research, Inc. scaleup development of dense-phase hydrogen separation membrane; Gas Technology Institute development of high-temperature, hydrogen selective membrane reactor; SouthWest Research Institute development of manufacturing techniques for producing thin, dense, self-supporting Pd alloy membranes for improved hydrogen separation; University of California-Davis investigation into the production of hydrogen from coal-based methanol; and Ohio State University development of a high-temperature CO_2 sorbent process for producing high-purity hydrogen from synthesis gas and capturing CO_2.

- The Advanced Research subprogram funds research at major performers at non-DOE locations. An example of these performers include, the Albany Research Center which conducts research on materials and mineralization sequestration processes.

- The Distributed Generation Systems subprogram funds research at major performers at non-DOE locations. Examples of these performers include the SECA industry teams and SECA core technology teams.

Natural Gas Technologies
The Department's Natural Gas Technologies program, within the Fossil Energy and Development program, funds research at major performers at non-DOE locations. The budget proposes to conduct orderly termination of this program in FY 2006.

Petroleum – Oil Technology
The Department's Oil Technology program, within the Fossil Energy and Development program, funds research at major performers at non-DOE locations. The budget proposes to conduct orderly termination of this program in FY 2006.

Fossil Energy Environmental Restoration
Activities include environmental protection, and cleanup activities at several former off-site research and development locations.

Advanced Metallurgical Processes
The Advanced Metallurgical Processes program conducts inquiries, technological investigations, and research concerning the extraction, processing, use, and disposal of mineral substances under the mineral and materials science program at the Albany Research Center in Oregon.

Cooperative Research and Development
Provides the federal share of support for Jointly Sponsored Research Programs (JSRP) at the Western Research Institute (WRI) and the University of North Dakota Energy and Environmental Research Center (UNDEERC).